

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
21 October 2021 (21.10.2021)



(10) International Publication Number  
**WO 2021/211059 A1**

(51) International Patent Classification:

C07K 1/36 (2006.01) C08L 89/04 (2006.01)  
C07K 14/47 (2006.01) A61K 8/65 (2006.01)

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

(21) International Application Number:

PCT/SG2021/050205

Published:

— with international search report (Art. 21(3))  
— in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE

(22) International Filing Date:

13 April 2021 (13.04.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

10202003536S 17 April 2020 (17.04.2020) SG

(71) Applicant: **NANYANG TECHNOLOGICAL UNIVERSITY** [SG/SG]; 50 Nanyang Avenue, Singapore 639798 (SG).

(72) Inventors: **NG, Kee Woei**; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG).  
**LAH, Hui Ying**; c/o Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798 (SG).

(74) Agent: **SPRUSON & FERGUSON (ASIA) PTE LTD**; P.O. Box 1531, Robinson Road Post Office, Singapore 903031 (SG).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(54) Title: KERATIN FILAMENT NETWORKS

(57) Abstract: The present disclosure relates to a method of forming a keratin filament network, comprising: (i) dialysing a solubilized keratin solution in a dialysis buffer solution at a pH of about 2.5 to about 5.5 to obtain purified keratin; (ii) mixing the purified keratin with a salt in the acidic buffer solution; and (iii) drying the solution of step (ii) to form the keratin filament network. In one embodiment, the dialysis buffer solution comprises a weak acid, a denaturing agent and a reducing agent. The said method comprises self-assembly of the keratin filament network. The present disclosure also relates to a keratin filament network comprising at least 2 Type I human hair keratins and at least 2 Type II human hair keratins.



WO 2021/211059 A1